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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/506,977

09/08/2004

Yoshio Yoshida

TAKIT-0189

6913

23599 7590 08/01/2007
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EXAMINER

SHEWAREGED, BETELHEM

ART UNIT

PAPER NUMBER

1774

MAIL DATE

DELIVERY MODE

08/01/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/506,977

Applicant(s)

YOSHIDA ET AL.

Examiner

Betelhem Shewareged

Art Unit

1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's response filed on 05/24/2007 has been fully considered. The claim objection has been withdrawn in view of Applicant's amendment.
2. Claims 1, 4, 7-10 and 13 are amended, claim 2 is canceled, claims 14-20 are added, and claims 1 and 3-20 are pending.

Claim Objections

3. Claim 1 is objected to because of the following informalities: In line 10, the use of the word ".about." between 98 and 99 is not clear. Appropriate correction is required.

Information Disclosure Statement

4. The listing of references in the Search Report is not considered to be an information disclosure statement (IDS) complying with 37 CFR 1.98. 37 CFR 1.98(a)(2) requires a legible copy of: (1) each foreign patent; (2) each publication or that portion which caused it to be listed; (3) for each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion, unless the cited pending U.S. application is stored in the Image File Wrapper (IFW) system; and (4) all other information, or that portion which caused it to be listed. In addition, each IDS must include a list of all patents, publications, applications, or other information submitted for consideration by the Office (see 37 CFR 1.98(a)(1) and (b)), and MPEP § 609.04(a), subsection I. states, "the list ... must be submitted on a

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separate paper." Therefore, the references cited in the Search Report have not been considered. Applicant is advised that the date of submission of any item of information or any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the IDS, including all "statement" requirements of 37 CFR 1.97(e). See MPEP § 609.05(a).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 5, 8, 11-13, 15, 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barcock et al. (US 6,502,935 B1) in view of Urasaki et al. (US 6,403,198 B1).

7. Barcock teaches an ink jet recording material having a support, a lower pigment layer on the support and an upper pigment layer on the lower pigment layer (abstract). The upper layer is equivalent to the claimed high gloss cast coating layer. The support is a base paper, which has open pore structure (col. 3, line 49). The upper layer comprises a mixture of cationic silica particles having a particle size of 200-300nm, and alumina particles, wherein the ratio of the alumina to silica is from 4:1 to 1:1 (col. 2, line 61 thru col. 3, line 3). The upper layer further comprises a binder such as polyvinyl alcohol (col. 3, line 8), a crosslinking agent such as boric acid (col. 3, line 24 and Table

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2), and a dye fixing/cationic substance (col. 3. line 24). The coating weight of the upper layer is 10-25 g/m². After the layers are applied, the coated paper is calendered in order to increase the smoothness. The ratio of particles to binder is 20:1 to 1:1 (col. 3, line 20).

8. Barcock does not teach two kinds of polyvinyl alcohols. However, Urasaki teaches an ink jet recording medium comprising at least two kinds of polyvinyl alcohols (abstract). Urasaki further teaches the at least two kinds of polyvinyl alcohols are polyvinyl alcohol having a saponification degree of 92% or higher having a polymerization degree of 2500 or lower and polyvinyl alcohol having a saponification degree of 90% or lower having a polymerization degree of 2000 or higher (col. 4, lines 42-46). The relation of contents of the polyvinyl alcohol having a saponification degree of 92% or higher and the polyvinyl alcohol having a saponification degree of 90% or lower is between 4 and 40, inclusive (col. 5, lines 1-13), which overlaps with the claimed range of between 20 and 80, inclusive. Barcock and Urasaki are analogous art because they are from the same field of endeavor that is the ink jet recording medium art. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the at least two kinds of polyvinyl alcohols of Urasaki with the invention of Barcock to inhibit cracking of the coat (col. 4, line 19 of Urasaki).

9. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barcock et al. (US 6,502,935 B1) in view of Urasaki et al. (US 6,403,198 B1) as applied to claim 1 above, and further in view of Ogawa et al. (US 5,750,200).

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10. Ogawa teaches an ink jet recording sheet comprising a support, an ink receiving layer on the support and a gloss providing layer on the ink receiving layer (abstract).

The gloss providing layer is equivalent to the claimed high gloss cast coating layer. The gloss providing layer is formed by press contacting the gloss-providing layer in a wet state a specular roll for specular finish (hereinafter referred to as cast treatment).

11. Barcock and Ogawa are analogous art because they are from the same field of endeavor that is the ink jet recording medium and method of making the medium art. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the method of cast treatment of Ogawa with the invention of Barcock in order to further improve the gloss of the ink jet recording sheet (col. 14 lines 42-46).

12. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barcock et al. (US 6,502,935 B1) in view of Urasaki et al. (US 6,403,198 B1) as applied to claim 1 above, and further in view of Ichioka et al. (US 6,177,188 B1).

13. Barcock does not teach polyacrylamine hydrochloride as the dye fixing/cationic substance. However, Ichioka teaches an ink jet recording medium comprising polyacrylamine hydrochloride as a cationic substance (col. 11, line 7). Barcock and Ichioka are analogous art because they are from the same field of endeavor that is the ink jet recording medium art. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the polyacrylamine hydrochloride of Ichioka with the invention of Barcock in order to improve the water resistance of the printed matter formed using an ink jet ink (col. 6, lines 30-32 of Ichioka).

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14. Claims 6, 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barcock et al. (US 6,502,935 B1) in view of Urasaki et al. (US 6,403,198 B1) as applied to claim 1 above, and further in view of Sakaki et al. (US 5,246,774).

15. Barcock does not teach the claimed particle size of the alumina, and that the alumina has a gamma structure. However Sakaki teaches a recording medium comprising alumina particles having a gamma structure (col. 8, line 22), and a particle diameter of 1nm to 10um (col. 9, line 1). Barcock and Sakaki are analogous art because they are from the same field of endeavor that is the ink jet recording medium art. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the alumina particles of Sakaki with the invention of Barcock so as to improve the effect of capturing dyes in the layer (col. 8, line 60 of Sakaki), and enhance print quality by reducing blurs and feathering (col. 9, lines 3-5 of Sakaki).

16. Claims 1, 4, 9-13 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukoyoshi et al. (US 6,242,082 B1) in view of Yasuda et al. (US 5,213,873) and Urasaki (US 6,403,198 B1).

17. Mukoyoshi discloses an ink jet recording sheet comprising a support, at least one ink receiving layer on the support and a gloss layer on the ink receiving layer (abstract). The gloss layer is equivalent to the claimed high gloss cast coating, and the ink receiving layer is equivalent to the claimed under layer. The support comprises a paper having air permeability (col. 3, line 40). The gloss layer comprises a binder such as

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polyvinyl alcohol, and a pigment selected from at least silica and alumina, wherein the particle size of the silica is 10-400nm (col. 8, line 40 thru col. 9, line 20). The gloss layer further comprises a cationic substance (col. 9, line 10). Even though Mukoyoshi does not teach a combination of alumina and silica, it would be obvious to combine both alumina and silica so as to provide a layer having the same effect. *In re Crockett*, 126 USPQ 186, It is obvious to combine separately taught prior art ingredients which perform the same function; it is logical that they would produce the same effect and supplemental each other. The gloss layer is formed by a wet casting method in which the surface of the ink receiving layer is coated with a coating liquid containing a resin and a pigment; the coating liquid layer is brought, while the layer is kept in the wetted condition, into contact under pressure with a mirror-finished casting surface of a heated casting drum; the coating liquid layer is dried; and then the dried gloss layer is separated from the casting drum surface (col. 10, line 20).

18. Mukpyoshi does not teach two kinds of polyvinyl alcohols. However, Urasaki teaches an ink jet recording medium comprising at least two kinds of polyvinyl alcohols (abstract). Urasaki further teaches the at least two kinds of polyvinyl alcohols are polyvinyl alcohol having a saponification degree of 92% or higher having a polymerization degree of 2500 or lower and polyvinyl alcohol having a saponification degree of 90% or lower having a polymerization degree of 2000 or higher (col. 4, lines 42-46). The relation of contents of the polyvinyl alcohol having a saponification degree of 92% or higher and the polyvinyl alcohol having a saponification degree of 90% or lower is between 4 and 40, inclusive (col. 5, lines 1-13), which overlaps with the claimed

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range of between 20 and 80, inclusive. Mukoyoshi and Urasaki are analogous art because they are from the same field of endeavor that is the ink jet recording medium art. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the at least two kinds of polyvinyl alcohols of Urasaki with the invention of Mukoyoshi to inhibit cracking of the coat (col. 4, line 19 of Urasaki).

19. Mukoyoshi does not disclose ink receiving layer as recited in the claimed invention. However, Yasuda teaches an ink jet recording sheet comprising a substrate and an image receiving layer on the substrate (abstract). The image receiving layer comprises a binder and silica particles having an oil absorption of 150ml/100g or more (col. 5, lines 5-8). The silica particles are mixed with ground calcium carbonate (col. 7, line 3). The amount of the binder in the image receiving layer is 15-40% by weight (col. 7, line 21). The particle size of the silica particles is preferably 4 μ m or less (col. 6, line 19). Mukoyoshi and Yasuda are analogous art because they are from the same field of endeavor that is the inkjet recording sheet art. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the image receiving layer of Yasuda with the invention of Mukoyoshi in order to improve the capacity of absorbing an aqueous ink at a high speed and in a large amount, and of forming ink images thereon at a high speed and at a high resolving power, without creating curling, undulations or waving therein, and also to improve the capacity of forming ink images having a high water resistance and storage durability without curling and undulations, and having an easy handling property (see col. 3, line 65 thru col. 4, line 8 of Yasuda).

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20. With respect to the particle size and the amount of the ground calcium carbonate in the layer, the experimental modification of this prior art in order to ascertain optimum operating conditions fails to render applicants' claims patentable in the absence of unexpected results. *In re Aller*, 105 USPQ 233. One of ordinary skill in the art would have been motivated to adjust the particle size and the amount of the ground calcium carbonate in order to control the brightness and whiteness of the layer. A prima facie case of obviousness may be rebutted, however, where the results of the optimizing variable, which is known to be result-effective, are unexpectedly good. *In re Boesch and Slaney*, 205 USPQ 215.

Response to Arguments

21. Applicant's arguments with respect to claims 1, 4, 5 and 8-13 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

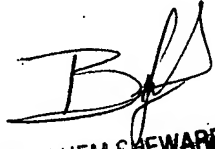
22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betelhem Shewareged whose telephone number is 571-272-1529. The examiner can normally be reached on MAX FLEX.

23. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on 571-272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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24. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BS
July 28, 2007.


BETELHEM SHEWAREGED
PRIMARY EXAMINER